WHY LINUX IN DEVOPS NOT OTHER OS ?

What is Linux ?

Just like Windows, iOS, and Mac OS, Linux is an operating system. In fact, one of the most popular platforms we use, Android, is powered by the Linux operating system.

Why is Linux better than other operating systems?

Open-source **:** Source code is easily available. Anyone having programming knowledge can customize the operating system. One can contribute, modify, distribute, and enhance the code for any purpose.

Security **:** It is not completely safe, but it is less vulnerable than others. Each application needs to authorize by the admin user. The virus is not executed until the administrator provides the access password. Linux systems do not require any antivirus program.

Free **:** Linux system is that it is free to use. We can easily download it, and there is no need to buy the license for it. We have to pay a huge amount for the license of the other operating systems.

Lightweight **:** The requirements for running Linux are much less than other operating systems. Most of the Linux distributions required as little as 128MB of RAM around the same amount for disk space.

Stability **:** Linux is more stable than other operating systems. Linux does not require to reboot the system to maintain performance levels. It rarely hangs up or slow down. It has big up-times.

Distributions/ Distros **:**There are many Linux distributions available in the market. It provides various options and flavors of Linux to the users. We can choose any distros according to our needs. Some popular distros are **Ubuntu, Fedora, Debian, Linux Mint, Arch Linux,** and many more. For the beginners, **Ubuntu** and **Linux Mint** would be useful and, Debian and Fedora would be good choices for proficient programmers.

Community Support **:** Linux provides large community support. We can find support from various sources. There are many forums available on the web to assist users. Further, developers from the various opensource communities are ready to help us.

Why Linux is necessary for DevOps ?

- **Operating System Dominance:**
  Majority servers and cloud infrastructure run Linux as their operating system. Understanding Linux commands is essential for managing and configuring these systems.

- **Scripting and Automation:**
  DevOps heavily relies on automation, and Linux provides a powerful command-line interface that allows for the creation of scripts and automation tasks. Bash scripting, in particular, is a common practice in DevOps for task automation.

- **Infrastructure as Code (IaC):**
  DevOps often involves managing infrastructure as code, and many tools used in this space are often command-line driven. This includes tools like Terraform, Ansible, and others, which are frequently used to provision, configure, and manage infrastructure.

- **Containerization:**
  Technologies like Docker and Kubernetes, which are fundamental to modern DevOps practices, have a strong affinity for Linux. Docker containers are typically based on lightweight Linux distributions, and Kubernetes often runs on Linux nodes.

- **Monitoring and Troubleshooting:**
  In DevOps, it's essential to monitor and troubleshoot systems. Linux commands provide a direct and efficient way to access logs, check system resources, and diagnose issues.

- **Package Management:**
  Package managers like apt (Advanced Package Tool) in Debian/Ubuntu or yum in Red Hat/CentOS are used to install and manage software packages on Linux. Understanding these tools is crucial for setting up and maintaining environments.

- **Version Control Systems:**
  Git, a widely used version control system, is typically accessed via the command line. DevOps practitioners need to be familiar with Git commands for versioning, branching, and collaboration.

- **Security and Permissions:**
  Managing user permissions, securing systems, and configuring firewalls often involve Linux commands. DevOps engineers need to understand how to secure systems and manage access controls.

- **Log Analysis:**
  Linux commands are vital for analyzing logs, which is critical for identifying issues, monitoring system performance, and ensuring security.

- **Cloud Platforms:**
  Many cloud platforms, such as AWS, Azure, and Google Cloud, offer command-line interfaces (CLI) for interacting with their services. These CLIs are often designed to be used in Linux environments.

- **Configuration Management:**
  Tools like Ansible, Chef, and Puppet, which are used for configuration management, often rely on Linux commands to execute tasks on managed systems.

- **Continuous Integration/Continuous Deployment (CI/CD):**
  CI/CD pipelines often involve running scripts and commands to build, test, and deploy applications. These tasks are typically executed on Linux-based systems.

In summary, Linux commands form the backbone of many DevOps practices, providing a versatile and efficient means to interact with and manage the underlying infrastructure, automate tasks, and troubleshoot issues. Proficiency in Linux command-line operations is a valuable skill for anyone working in DevOps.